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**Complication Risks of the Transforaminal Approach to the Lumbar Spine: An Anatomic and Patho-anatomic Risk Assessment**

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**Purpose:** The paramedian and lateral transfemoral approach to the lumbar spine has known pitfalls from operating near the dorsal root ganglion. With foramininal endoscopic surgery, however, documentation and visualization of patho-anatomy has identified additional, but lesser known causes of sciatica and post-operative dysesthesia.

**Method:** Patients with minor and major adverse effects under going endoscopic foraminal surgery are prospectively studied and retrospectively reviewed. Inflammatory conditions and patho-anatomy identified with the endoscope recorded in vivo serves as the data base for study.

**Findings:** Post-operative dysesthesia occurred an average of 8-15% of the time in a review spanning over 1000 consecutive procedures for herniated lumbar discs and painful degenerative conditions of the lumbar spine. Findings of “anomalous” nerves, synovial cysts, and inflammatory membranes is routinely seen, but has not been cited in the literature as a complication risk. Furcal (forked) nerves contribute significantly to the pre-and post-operative symptom complex. Furcal nerves may be difficult to differentiate from the foraminal ligament. Autonomic nerves confirmed by endoscopic excisional biopsy, have also been identified. The most common pathologic endoscopic finding was inflammatory and granulation tissue in the foramen, annulus, and disc. The presence of inflammation in normal tissue is correlated with pain. This endoscopic finding correlated well with severe back pain and sciatica produced by low pressure low volume discography. Its severity post-operatively may be correlated with the extent of thermal ablation on the outer annulus and and the presence of anomalous and furcal nerves in the foramen.

**Discussion:** Dysesthesia is a "complication" that is an unavoidable consequence of surgical access through the foramen, even when no adverse event is anticipated and when the surgery goes well. Surgeons working in the foramen through a paramedian posterior approach encounters the same surgical risk. Working near the Dorsal Root Ganglion is a Known risk by itself, in all transforaminal surgery. Ablation or removal of nerves in the inflammatory membrane, however, results in a satisfactory surgical outcome of overall pain relief of axial back pain and sciatica, but may also produce a temporary side effect of dysesthesia of varied severity. Furcal nerves, when identified, but are correlated with temporary dysesthesia if ablated and small in size. Dysesthesia is usually mild, self limited, and temporary, but a major concern to patients who gets it severely post-operately. Permanent residuals are rare, but may result in residual numbness and extremity weakness. Post-operative dysesthesia responds well to Lyrica or Neurontin, foraminal nerve blocks, and lumbar sympathetic blocks. Co-morbidities such as peripheral neuropathy, and seizure disorders are additional risk factors.

**Conclusion:** Post Operative neuropathic pain staying the same or worsening may not be able to be completely eliminated, and is a risk of the endoscopic procedure. Pre-operative Consent should include neuropathic pain, usually transient, but with a possibility of permanent numbness or weakness. A thorough discussion of the risks associated with foraminal surgery must be explained to any patient undergoing open or endoscopic foraminal surgery. Knowledge of the effect of foraminal epidural injections intra-operatively, post-operatively, and in the management of post-operative dysesthesia will decrease this adverse side effect of foraminal surgery. The overall risks and surgical morbidity are still less than posterior trans-canal surgery.